

Biomass fiber isolation via alkali and/or bleach-based treatment

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Biomass is an abundant, widely distributed, and renewable resource of energy that is economically attractive and environmentally friendly, including all plants, microorganisms, and their waste products. Among these, natural fiber's different applications have been increased to respond to the environmental concern and requirements for developing sustainable materials. Flax fiber (*Linum Usitatissimum*), is a cellulosic material that has been widely used due to its relative availability, biocompatibility, and excellent mechanical properties. But, still, there is some problem related to the natural fibers impurities that limit their applications in some cases. Impurities may include oils and waxes along with structural fractions of the cellulosic fibers (lignin, pectin, and hemicellulose) which may negatively impact on fiber's mechanical strength and interfacial bonding between fiber and a matrix polymer in biocomposites. To address this problem, we have used two important chemical modification methods, alkali treatment with NaOH and bleaching with NaClO₂. A comparison between both techniques is studied by the use of FTIR as the main characterization technique. The results show that the alkali treatment was effective in hemicellulose removal, while bleaching was more effective in removing lignin and wax impurities.